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**Access. Number**

97-323415

**Title**

INK JET RECORDING APPARATUS

**Patent assignee**

(2000526) BROTHER IND LTD

**Inventor(s)**

HIWADA, SHIYUUHEI

**Pub. number**

97.12.16 J09323415, JP 09-323415

**Appl. Number**

96.06.05 96JP-165302, 08-165302

**Engl. Ab. Source**

97.12.16 SECT. , SECTION NO. ; VOL. 97, NO. 12.

**Int. class.**

B41J-002/045; B41J-002/055; B41J-002/175

**JAPIO class. codes**

29.4 (PRECISION INSTRUMENTS--Business Machines)

**Fixed Keyword**

R005 (PIEZOELECTRIC FERROELECTRIC SUBSTANCES); R105 (INFORMATION PROCESSING--Ink Jet Printers); R124 (CHEMISTRY--Epoxy Resins); R131 (INFORMATION PROCESSING--Microcomputers & Microprocessors)

**Abstract**

PROBLEM TO BE SOLVED:To enhance the radiation efficiency of a driver IC chip. SOLUTION:An anisotropic conductive material 65 is interposed between the rear surface 61 of a driver IC chip 60 and the side surface 21f of a head 21 to closely bond and fix the driver IC chip 60 and the side surface 21f of the head 21. Further, chip electrodes 62, 63 and head electrodes 68, 69 are electrically connected by the anisotropic conductive material 65. By this constitution, the heat generated in the driver IC chip 60 is conducted to the side surface 21f of the head 21 through the anisotropic conductive material 65 and further conducted to the ink in the head 21. That is, the driver IC chip 60 can be forcibly cooled by the ink.

**Access. Number**

97-323414

**Title**

INK JET RECORDING APPARATUS

**Patent assignee**

(2000526) BROTHER IND LTD

**Inventor(s)**

HIWADA, SHIYUUHEI

**Pub. number**

97.12.16 J09323414, JP 09-323414

**Appl. Number**

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**Engl. Ab. Source**

97.12.16 SECT. , SECTION NO. ; VOL. 97, NO. 12.

**Int. class.**

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**JAPIO class. codes**

29.4 (PRECISION INSTRUMENTS--Business Machines)

**Fixed Keyword**

R005 (PIEZOELECTRIC FERROELECTRIC SUBSTANCES); R044 (CHEMISTRY--Photosensitive Resins); R105 (INFORMATION PROCESSING--Ink Jet Printers); R124 (CHEMISTRY--Epoxy Resins); R131 (INFORMATION PROCESSING--Microcomputers & Microprocessors)

**Abstract**

PROBLEM TO BE SOLVED:To enhance the radiation efficiency of a driver IC chip. SOLUTION:The chip electrodes 62, 63 formed on the rear surface 61 of a driver IC chip 60 and the head electrodes 68, 69 formed on the side surface 21f of a head 21 are electrically connected by a bump 64 and the gap between the rear surface 61 of the driver IC chip 60 and the side surface 21f of the head 21 is filled with a potting material 66 to cover the surface of the driver IC chip 60 with the potting material 66. By this constitution, the heat generated in the driver IC chip 60 is conducted to the side surface 21f of the head 21 through the driver IC chip 60 and further conducted to the ink in the head 21. That is, the driver IC chip 60 can be forcibly cooled by the ink.

**Access. Number**

95-304168

**Title**

INK JET DEVICE

**Patent assignee**

(2000526) BROTHER IND LTD

**Inventor(s)**

ISHIKAWA, HIROYUKI

**Pub. number**

95.11.21 J07304168, JP 07-304168

**Appl. Number**

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Engl. Ab. Source

95.11.21 SECT. , SECTION NO. ; VOL. 95, NO. 11.

Int. class.

B41J-002/045; B41J-002/055

JAPIO class. codes

29.4 (PRECISION INSTRUMENTS--Business Machines)

Fixed Keyword

R005 (PIEZOELECTRIC FERROELECTRIC SUBSTANCES); R105 (INFORMATION PROCESSING--Ink Jet Printers); R124 (CHEMISTRY--Epoxy Resins)

**Abstract**

**PURPOSE:** To lower the cost and stabilize jet characteristics. **CONSTITUTION:** A substrate 41 provided with a conductor circuit 42 corresponding to the positions of respective ink chambers is bonded on a face on the side opposite to the side of forming channels 15 of a piezoelectric ceramic plate 5. The substrate 41 is composed of an insulated body to transmit easily the heat of alumina or the like, and an IC chip 60 is mounted on the substrate 41. When the voltage is applied to an ink jet head 1 by the IC chip 60 in order to drive the ink jet head 1, electric current flows through the IC chip 60 to generate heat. The heat is transmitted to ink in an ink chamber or a manifold 21 through the substrate 41 to heat the ink. As the ink holding the heat is jetted from a nozzle 32, the heat is removed from the ink head 1 to provide the cooling effect of the IC chip 60.

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	2/055			1 0 3 A
	2/175			1 0 2 Z

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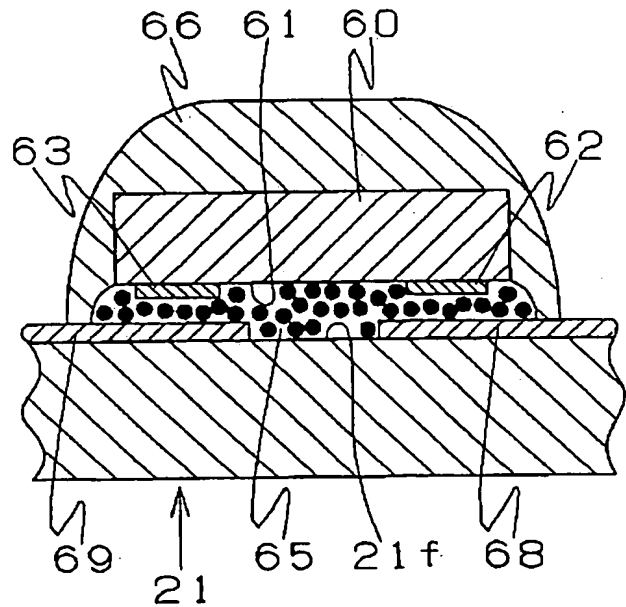
(74) 代理人 弁理士 田下 明人 (外1名)

(54) 【発明の名称】 インクジェット記録装置

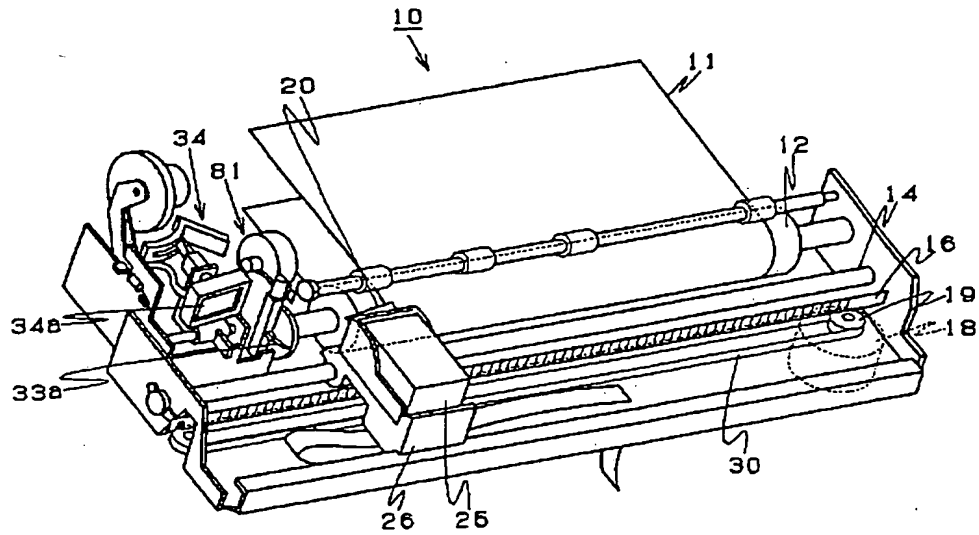
(57) 【要約】

【課題】 ドライバICチップの放熱効率を高めることのできるインクジェット記録装置を実現する。

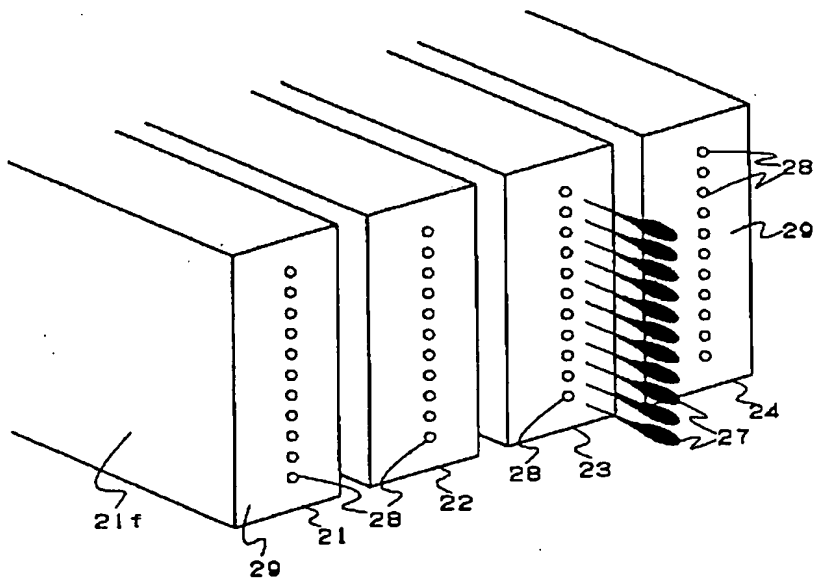
【解決手段】 ドライバICチップ60の下面61とヘッド21の側面21fとの間には、異方性導電材料65が介在されており、その異方性導電材料65によりドライバICチップ60は、ヘッド21の側面21fに密着固定されている。また、その異方性導電材料65によりチップ電極62、63とヘッド電極68、69とが電氣的に接続されている。これにより、ドライバICチップ60に発生した熱は、異方性導電材料65を介してヘッド21の側面21fに伝熱され、さらにヘッド21内のインクに伝熱される。つまり、ドライバICチップ60をインクにより強制水冷することができる。



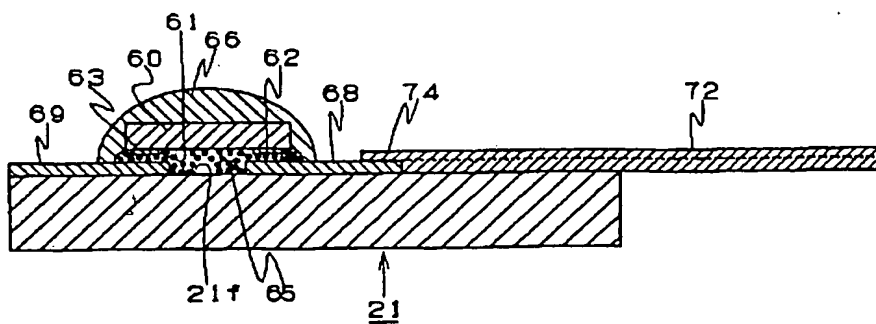
【図1】



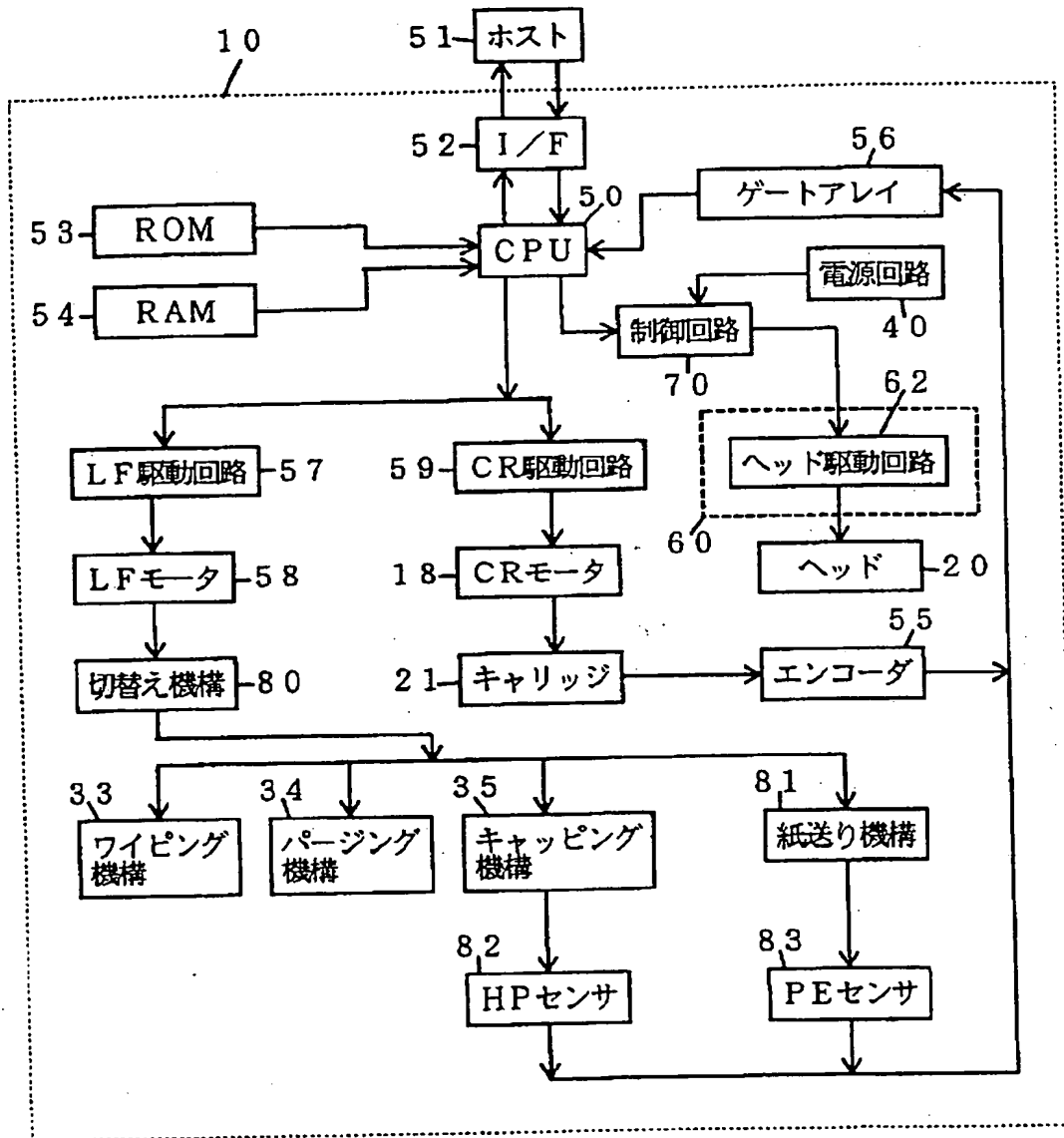
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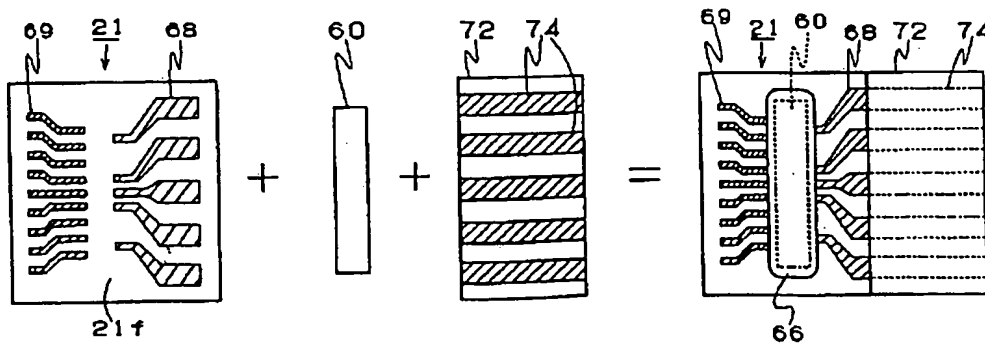
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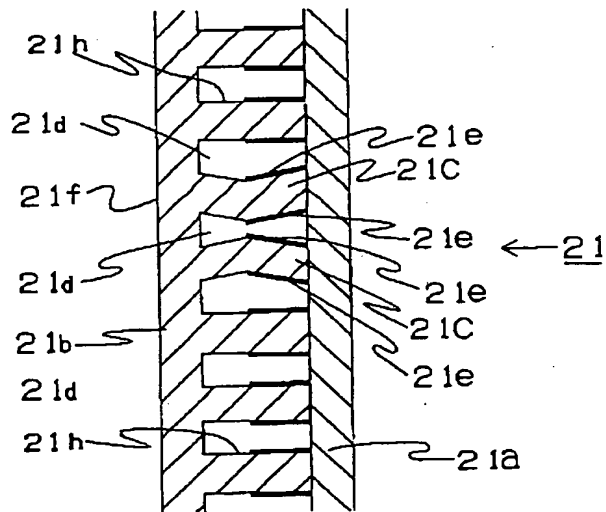
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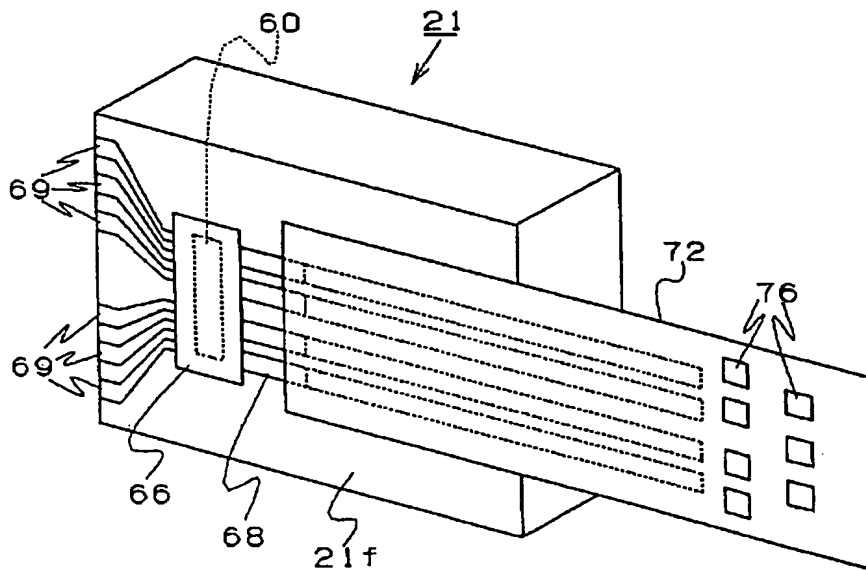
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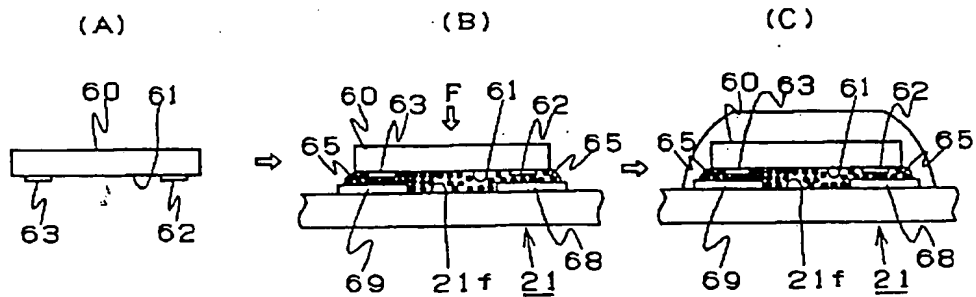
【図4】



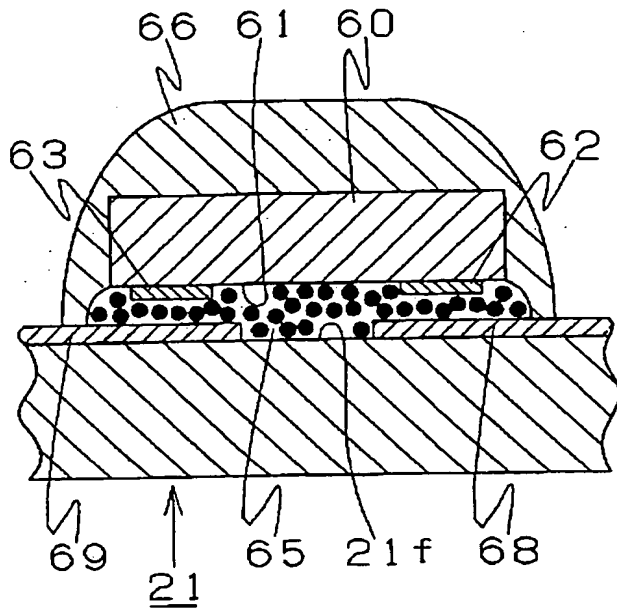
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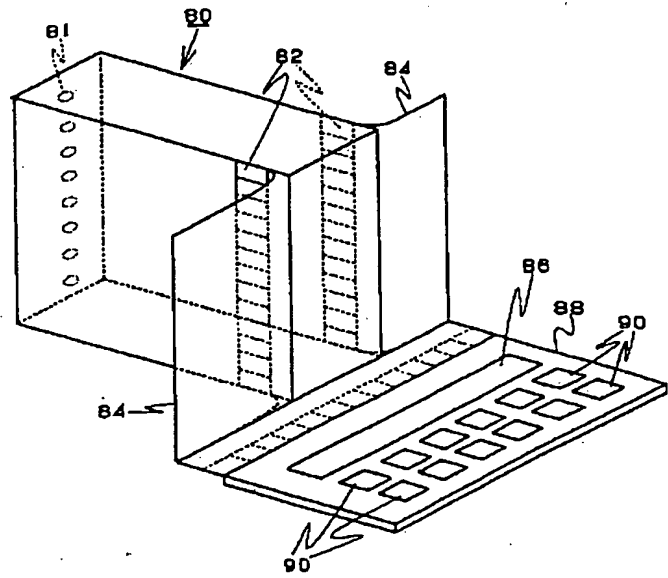
【図9】



【図7】



【図11】



【図10】

